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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,513	11/20/2001	Richard LaPeruta, JR.	PU010264	8631

7590

02/09/2004

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 02/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/988,513

Applicant(s)

LAPERUTA, ET AL.

Examiner

Michael Cleveland

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Pri rity under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7 and 8 are unclear because claim 7 recites that "the organic materials include an oxidizer", but dependent claim 8 recites specific oxidizers, none of which are organic.

Accordingly, claims 7 and 8 have been treated as specifying that the metal layer may also be formed on top of an oxidizer, which need not be organic (and may be one of the specifically claimed inorganic materials of claim 8). (Claim 9 is rejected for containing this formal flaw of parent claim 7.)

Claim 10 contains the flaw of claim 7 and further contains the problem that it specifies that "the organic materials" are volatilized in the frit curing step. However, parent independent claim 5 specifies that "organic materials" are volatilized during the screenbake step and then "remaining organic materials" are volatilized during the frit curing step. Therefore, the phrase "the organic materials" does not have proper antecedent basis in the parent claim because the phrase "the organic materials" must refer to those that are volatilized during the screen baking step and that therefore cannot be volatilized in the frit curing step. Accordingly, the Examiner treated claim 10 as a reference to the "remaining organic materials" of claim 5, which are volatilized during the frit curing step.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1762

4. Claims 1, 3, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Giancaterini (U.S. Patent 4,590,092, hereafter '092).

'092 teaches a method of manufacturing a luminescent screen assembly for a color cathode-ray tube (CRT) (col. 1, lines 9-16) comprising the steps of:

screening an inner surface of a faceplate panel, thereby providing on the inner surface a screened surface having phosphor deposits (col. 2, lines 45-56) and organic materials (col. 3, lines 1-8; col. 4, lines 21-23) having at least two components with different thermal decomposition characteristics (e.g., polyvinyl alcohol and ammonium oxalate), at least some of the organic materials overlying the phosphor deposits (col. 3, lines 1-7);

depositing a metal layer on the organic materials (col. 3, lines 1-13); and

removing the organic materials from the inner surface of the faceplate panel by volatilizing the organic materials through heating (col. 3, lines 14-22), which diffuse through holes in the aluminum layer faster than the gaseous decomposition products evolve (otherwise, blisters would form) (col. 3, lines 14-21; col. 2, lines 16-30).

Claim 3: The process must inherently have a rate of temperature increase (col. 3, lines 14-16) which necessarily determines the volume flow rates.

Claim 11: The screen is heated higher than 350 °C to volatilize the organic components (col. 3, lines 14-17). This necessarily involves heating from the starting (i.e., first) temperature to a second temperature at which a first organic component (the oxalate, which vaporizes first) begins to decompose, heating to a third temperature above the second temperature during which at least the first organic component begins to decompose, and heating to the final temperature during which the other organic components at least finish decomposing.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1762

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giancaterini et al. (U.S. Patent 4,590,092, hereafter '092).

'092 is discussed above. It does not explicitly state that the volume rate of decomposition products is less than the diffusion rate through the metals. However, it does teach that the probability of blister formation is directly proportional to the speed of decomposition or evaporation (col. 2, lines 16-30). Thus, the process necessarily involves a trade-off between greater production for faster heating and less blister formation for slower heating. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the rate of decomposition in order to achieve a desired balance of productivity and blister formation.

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giancaterini '092 as applied to claim 1 above, and further in view of Saulnier, Jr. (U.S. Patent Office 3,067,055, hereafter '055) and Harper (U.S. Patent 4,485,158, hereafter '158).

'092 is discussed above. It does not teach that organic materials are present in a coating weight of at least 1.0 mg/cm².

The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. '055 teaches that phosphor layers may be deposited with coating weights of up to 2.78 mg/cm² of which up to 17% may be an organic binder, such as polyvinyl alcohol (col. 2, lines 35-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the phosphor layer of '055 as the particular phosphor layer of '092 with a reasonable expectation of

Art Unit: 1762

success because '055 teaches that it is an operative phosphor layer. The layer contains up to at least $(0.17)(2.78 \text{ mg/cm}^2)=0.47 \text{ mg/cm}^2$ of organic material.

'158 teaches that an organic precoating layer may be used to enhance the adherence of subsequently deposited phosphors (col. 2, lines 48-68). The layer may have a coating weight of up to 0.8 mg/cm^2 (col. 5, lines 33-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the organic precoating layer of '158 in the invention of '092 in order to have enhanced the adhesion of the phosphor layers.

Thus, taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a precoating layer of up to 0.8 mg/cm^2 of organic material and up to 0.47 mg/cm^2 of organic material within the phosphor layer. Therefore, the prior art fairly teaches that operative amounts of organic materials include coating weights up to 1.27 mg/cm^2 . The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

9. Claims 3-6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giancaterini '092 as applied to claims 1 and 11 above, and further in view of Patel et al. (U.S. Patent 5,145,511, hereafter '511).

Claim 4-5: '092 is discussed above, but does not explicitly teach using more than one temperature rate nor screen bake and frit curing steps. However, the selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. '511 teaches that different heating rates may be used to allow screen bake and frit sealing (i.e., curing) cycles (col. 5, lines 22-56). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used different heating rates in the process of '092 because '511 teaches that they may be used to permit a combined screen bake and frit sealing cycle.

Claim 6: A source of oxygen may be present during frit curing (col. 5, lines 11-20); col. 1, line 59-col. 2, line 18).

10. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giancaterini '092 in view of Patel '511 as applied to claim 5 above, and further in view of Skinner, Jr. et al. (U.S. Patent 4,154,494, hereafter '494).

Claims 6-8: '092 and '511 are discussed above, but do not explicitly teach that an oxidizer is provided on the screen. '494 teaches that an oxidizing agent, such as potassium nitrate, may be included during a combined screenbake and frit curing in order to evolve oxygen and thereby minimize reduction during the frit curing (col. 2, lines 35-65). '494 teaches that the oxidizing agent is applied to the inside of the funnel, but is open to the possibility that it may be provided elsewhere (col. 2, lines 41-48). Taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the oxidizing agent of '494 in the method of '092 and '511 in order to have minimized reduction during the frit curing. Furthermore, it would have been obvious to have placed the oxidizing agent into the decomposable panel coatings of '092 and '511 with a reasonable expectation of success because '494 teaches a) that the oxidizing agent may be present in the form of a coating inside the funnel and panel upon joining, b) that the oxidizing agent operates by decomposing from its coating, and c) '494 indicates that the funnel is not the only location in which the oxidizing agent may be located and because the panel coating of '092 and '511 is taught to be decomposable and is necessarily confined within the joined panel and funnel during the frit sealing.

Claims 9-10: As discussed above, '092 teaches that the probability of blister formation is directly proportional to the decomposition rate. It has been held that the discovery of the optimum value of a result effective variable in a known process is ordinarily within the skill in the art. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the decomposition rate for the optimum balance of productivity and blister formation.

11. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giancaterini '092 in view of Patel '511 as applied to claim 5 above, and further in view of Harper '158 and Wagland (U.S. Patent 5,776,555, hereafter '555).

'092 and '511 teach baking CRT screens to decompose organics at a variety of temperature rates and teach heating to 225 °C at 7.4 °C/min. for 27 min, but does not explicitly teach the 2nd-5th temperature rates and ranges of Applicant's claim 12. While '511 teaches that baking may occur at about 450 °C (col. 2, lines 9-18), which is about 460 °C, there is no explicit teaching that polyvinyl alcohol and ammonium oxalate necessarily decompose in the regions of 240-300 °C, 300-350 °C, and 350-460 °C. Furthermore, they do not teach the presence of polymethylmethacrylate (PMMA), poly(2-hydroxyethyl methacrylate) (PHEM) and polystyrene.

However, '555 teaches that PMMA and PHEM are operative decomposable materials for smoothing phosphor layer prior to aluminizing (col. 3, lines 8-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated PMMA and PHEM into the coating of '092 and '511 with a reasonable expectation of success because '555 teaches that they are operable smoothing lacquer materials.

'158 teaches that an organic precoating layer of polystyrene may be used to enhance the adherence of subsequently deposited phosphors (col. 2, lines 48-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the polystyrene layer of '158 in the invention of '092 and '511 in order to have enhanced the adhesion of the phosphor layers.

Therefore, taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included ammonium oxalate, PMMA, PHEM, and polystyrene as decomposable materials before aluminizing the screen, and it would have been obvious based on the teachings of '092 and '511 that the process necessarily involves a trade-off between greater production for faster heating and less blister formation for slower heating to have optimized the temperature profile of decomposition in order to achieve a desired balance of productivity and blister formation.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lerner (U.S. Patent 3,821,009) is cited for its teachings regarding ammonium oxalate. Shibaoka et al. (U.S. Patent 5,252,112) is cited for its teachings of the provision of potassium nitrate to CRT panels.

Art Unit: 1762

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Tuesday-Friday and alternate Mon, 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Cleveland
Patent Examiner
February 4, 2004